

What Is Claimed

Claim 1. In a system utilizing a fine grinding wheel, the wheel having a fine grinding surface with a radial extent to an outside diameter,

the improvement of a dressing wheel system, the dressing wheel system including dressing material, said dressing material having a radial extent less than the radial extent of the fine grinding surface, means to bring said dressing material and the radial extent of the fine grinding surface into physical contact,

and movement means to move said dressing material and the fine grinding surface relative to one another to provide a flat to convex shape to the fine grinding surface.

Claim 2. The system of claim 1 characterized by means to flex the outside extent of the grinding surface to form a concave surface during operation of said movement means.

Claim 3. The system of claim 1 wherein the system has a production carrier assembly and characterized in that said movement means utilizes at least part of the production carrier assembly.

Claim 4. The system of claim 1 characterized in that said movement means includes planet gears.

Claim 5. The system of claim 4 wherein the system includes a production carrier assembly having a pinion drive and characterized by said movement means of said dressing wheel system utilizes the pinion drive.

Claim 6. The system of claim 1 wherein the system includes a production carrier assembly having a pinion drive and characterized by said movement means of said dressing wheel system utilizes the pinion drive.

Claim 7. The system of claim 6 wherein the pinion drive has a diameter and characterized in that said movement means includes an intermediate pinion extender gear, and said extender gear increasing the apparent diameter of the pinion drive.

Claim 8. The system of claim 1 wherein the production carrier assembly has a fixed outer ring and characterized by said movement means utilizes the fixed outer ring.

Claim 9. The system of claim 1 wherein the system includes a production carrier assembly having a pinion drive having a diameter and a fixed outer ring, and characterized by said movement means of said dressing wheel system utilizing the pinion drive,

said movement means also including an intermediate pinion extender gear, said extender gear increasing the apparent diameter of the pinion drive,

said movement means utilizing the fixed outer ring, planet dresser wheels, means to connect said cutting material to said planet dresser wheels, and said planet dresser wheels being drivingly located between said extender gear and the fixed outer gear.

Claim 10. The system of claim 1 wherein the fine grinding surface is formed of cutting materials embedded in a matrix and characterized by the dressing wheel system including removal means to remove the matrix to expose the cutting materials.

Claim 11. The system of claim 10 characterized in that said movement means includes planet gears and means selectively to connect said removal means to said planet gears.

Claim 12. The system of claim 10 characterized in that said planet gears have a rotational axis and said removal means being substantially displaced from said rotational axis.

Claim 13. The system of claim 1 characterized in that the fine grinding surface is dressed to a convex shape.

Claim 14. The system of claim 13 characterized in that said convex shape includes a taper.

Claim 15. The system of claim 14 characterized in that said convex shape includes at least one step.

Claim 16. The system of claim 13 characterized in that said convex shape is a curved shape.

Claim 17. In a system utilizing a fine grinding wheel, the wheel having a fine grinding surface with a radial extent to an outside diameter, the system having a production carrier assembly including planet gears and a pinion drive,

the improvement of a dressing wheel system, the dressing wheel system including dressing material, said dressing material having a radial extent less than the radial extent of the fine grinding surface, means to bring said dressing material and the radial extent of the fine grinding surface into physical contact,

movement means to move said dressing material and the fine grinding surface relative to one another to provide a convex shape to the fine grinding surface,

and said movement means utilizing at least part of the production carrier assembly and the pinion drive.

Claim 18. The system of claim 17 wherein the pinion drive has a diameter and characterized in that said movement means includes an intermediate pinion extender gear, and said extender gear increasing the apparent diameter of the pinion drive.

Claim 19. The system of claim 18 wherein the production carrier assembly has a fixed outer ring and characterized by said movement means utilizes the fixed outer ring.

Claim 20. The system of claim 17 wherein the production carrier assembly has a fixed outer ring, and the pinion drive has a diameter, and characterized by said movement means of said dressing wheel system utilizing the pinion drive,

said movement means also including an intermediate pinion extender gear, said extender gear increasing the apparent diameter of the pinion drive,

said movement means utilizing the fixed outer ring, planet dresser wheels, means to connect said cutting material to said planet dresser wheels, and said planet dresser wheels being drivingly located between said extender gear and the fixed outer gear.

Claim 21. The system of claim 17 wherein the fine grinding surface is formed of cutting materials embedded in a matrix and characterized by the dressing wheel system including an insert removal means to remove the matrix to expose the cutting materials prior to the dressing thereof.

Claim 22. The system of claim 21 characterized in that said movement means includes planet gears and means selectively to connect said insert removal means to said planet gears.

Claim 23. The system of claim 22 characterized in that said planet gears have a rotational axis and said insert removal means being substantially displaced from said rotational axis.

Claim 24. The system of claim 17 characterized in that said convex shape includes a taper.

Claim 25. The system of claim 24 characterized in that said convex shape includes at least one step.

Claim 26. The system of claim 17 characterized in that said convex shape is a curved shape.

Claim 27. In a system utilizing a fine grinding wheel, the system including a production carrier assembly having a pinion drive having a diameter and a fixed outer ring,

the wheel having a fine grinding surface with a radial extent to an outside diameter the fine grinding surface is formed of cutting materials embedded in a matrix,

the improvement of a dressing wheel system, the dressing wheel system including dressing material, said dressing material having a radial extent less than the radial extent of the fine grinding surface, means to bring said dressing material and the radial extent of the fine grinding surface into physical contact,

movement means to move said dressing material and the fine grinding surface relative to one another to provide a flat to convex shape to the fine grinding surface,

said movement means of said dressing wheel system utilizing the pinion drive,

said movement means also including an intermediate pinion extender gear, said extender gear increasing the apparent diameter of the pinion drive,

said movement means utilizing the fixed outer ring, planet dresser wheels, means to connect said cutting material to said planet dresser wheels, said planet dresser wheels being

drivingly located between said extender gear and the fixed outer gear,

removal means to remove the matrix to expose the cutting materials, means selectively to connect said removal means to said planet dresser gears, said planet dresser gears having a rotational axis and said insert removal means being substantially displaced from said rotational axis.

Claim 28. In a system utilizing a grinding wheel, the improvement of a dresser and movement means to move said dresser in respect to the grinding wheel.

Claim 29. A method for dressing a fine grinding wheel, the wheel having a fine grinding surface with a radial extent to an outside diameter, method comprising bringing dressing material and the outside diameter of the fine grinding surface into physical contact with said dressing material having a radial extent less than the radial extent of the fine grinding surface,

and moving said dressing material and the fine grinding surface relative to one another to provide a flat to convex shape to the fine grinding surface.